2003P07143 B3

(19) JAPANESE PATENT OFFICE

PATENT ABSTRACTS OF JAPAN

(11) Publication number: **03290976 A**

(43) Date of publication of application: **20.12.91**

(51) Int. Cl **H01L 29/94**

(21) Application number: **02091865**

(22) Date of filing: **06.04.90**

(71) Applicant: **KAMIYAMA KENICHI**

(72) Inventor: **KAMIYAMA KENICHI**

(54) SEMICONDUCTOR VARIABLE-CAPACITY ELEMENT

(57) Abstract:

PURPOSE: To attain a large variation in capacity and a large performance index and also to make a leak current small by forming an N-type semiconductor layer and others sequentially on a P-type semiconductor layer or by forming the P-type semiconductor layer and others sequentially on the N-type semiconductor layer.

CONSTITUTION: After an N-type semiconductor layer 2, an insulating film 3 and an electrode 4 are formed on a P-type semiconductor layer 1, an ohmic electrode 5 is formed on the rear side of a crystal. When the layer 1 is grounded and a negative voltage is impressed on the electrode 4, the impressed voltage makes the layer 1 inject holes into the layer 2 and the injected holes reach an interface between the layer 2 and the film 3 and give a capacity value. When the negative voltage is increased, the number of holes increases exponentially and the capacity value of a variable-capacity element increases to a large extent. When the electrode 4 is set at 0V, the surface of the film 2 on the film 3 side turns to have a flat energy band structure and the capacity value of the variable-capacity element becomes minimum. In the case when the layer 1, the film 3 and the electrode 4 are formed on the layer 2 and a positive voltage is impressed on the electrode 4, the capacity value of the variable-capacity element becomes minimum as well. According to this constitution, a small variation in capacity and a large performance index are attained and a leak current can be made small.